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NOTICE OF ALLOWANCE AND FEE(S) DUE

7278 7590 08/07/2008

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Church Street Station
New York, NY 10008-0770

| | |
|-------------|--------------|
| EXAMINER | |
| OLSON, ERIC | |
| ART UNIT | PAPER NUMBER |
| 1623 | |

DATE MAILED: 08/07/2008

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/511,707 | 10/15/2004 | Tsuyoshi Shimoboji | 09857/0201259-US0 | 6749 |

TITLE OF INVENTION: HYALURONIC ACID MODIFICATION PRODUCT

| APPLN. TYPE | SMALL ENTITY | ISSUE FEE DUE | PUBLICATION FEE DUE | PREV. PAID ISSUE FEE | TOTAL FEE(S) DUE | DATE DUE |
|----------------|--------------|---------------|---------------------|----------------------|------------------|------------|
| nonprovisional | NO | \$1440 | \$300 | \$0 | \$1740 | 11/07/2008 |

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: **Mail Stop ISSUE FEE**
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INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

7278 7590 08/07/2008

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Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)

(Signature)

(Date)

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|--|--------------|----------------|---------------------|----------------------|------------------|------------|--|--|--|
| nonprovisional | NO | \$1440 | \$300 | \$0 | \$1740 | 11/07/2008 | | | |
| EXAMINER | ART UNIT | CLASS-SUBCLASS | | | | | | | |
| OLSON, ERIC | 1623 | 536-055000 | | | | | | | |
| 1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363). | | | | | | | | | |
| <input type="checkbox"/> Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached. | | | | | | 1 _____ | | | |
| <input type="checkbox"/> "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a Customer Number is required. | | | | | | 2 _____ | | | |
| <input type="checkbox"/> The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form). | | | | | | 3 _____ | | | |

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent): Individual Corporation or other private group entity Government

4a. The following fee(s) are submitted:

Issue Fee
 Publication Fee (No small entity discount permitted)
 Advance Order - # of Copies _____

4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)

A check is enclosed.
 Payment by credit card. Form PTO-2038 is attached.
 The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____

Date _____

Typed or printed name _____

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This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)

(application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 396 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 396 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

| | | | |
|-------------------------------|------------------------|---------------------|--|
| Notice of Allowability | Application No. | Applicant(s) | |
| | 10/511,707 | SHIMOBOJI, TSUYOSHI | |
| | Examiner | Art Unit | |
| | Eric S. Olson | 1623 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTO-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. This communication is responsive to Applicant's amendment submitted March 21, 2008.
2. The allowed claim(s) is/are 2-5,7-10,12,13,16,17,20 and 21.
3. Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some* c) None of the:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. ____.
 3. Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: ____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) hereto or 2) to Paper No./Mail Date ____.
 - (b) including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date ____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. Notice of References Cited (PTO-892)
2. Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date ____
4. Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. Notice of Informal Patent Application
6. Interview Summary (PTO-413),
Paper No./Mail Date ____.
7. Examiner's Amendment/Comment
8. Examiner's Statement of Reasons for Allowance
9. Other ____.

/Shaojia Anna Jiang, Ph.D./
Supervisory Patent Examiner, Art Unit 1623

Examiner's Amendment

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Claim 2 is renumbered as claim 14.

Detailed Action

This office action is a response to applicant's amendment submitted March 21, 2008 wherein claims 2-5, 7, 8, 10, 12, 13, 16, and 20 are amended and claim 1 is cancelled. This application is a national stage application of PCT/JP03/04949, filed April 18, 2003, which claims priority to foreign applications JP2002-116508, filed April 18, 2002, JP2002-209429, filed July 18, 2002, and JP2002-331551, filed November 15, 2002.

Claims 2-5, 7-10, 12, 13, 16, 17, 20, and 21 are pending in this application.

Claims 2-5, 7-10, 12, 13, 16, 17, 20, and 21 as amended are examined on the merits herein.

Reasons for Allowance

Applicant's amendment, submitted March 21, 2008, with respect to the objection to instant claims 3 and 4 for incorrect syntax has been fully considered and found to be persuasive to remove the objection because the claims have been amended to have the correct syntax. Therefore the rejection is withdrawn.

Applicant's amendment, submitted March 21, 2008, with respect to the objection to instant claim 13 for a grammatical mistake has been fully considered and found to be persuasive to remove the objection because the claim has been amended to have the correct grammar. Therefore the rejection is withdrawn.

Applicant's amendment, submitted March 21, 2008, with respect to the rejection of instant claims 1, 2, 5, 7, 8, 10, 12, 13, 16, 17, 20, and 21 under 35 USC 102(a) for being anticipated by Kim et al., has been fully considered and found to be persuasive to remove the rejection as the claims now depend from claims 3 and 4 which require the limitation that the block polymer be bound to the hyaluronic acid at only one end, and claim 9 which recites a specific molecular weight not found in the reference. Therefore the rejection is withdrawn.

Claims 2-5, 7-10, 12, 13, 16, 17, 20, and 21 are pending in this application and have been examined on the merits herein.

Claims 1-17, 19-22, 25, and 29-40 are seen to be allowable. Reasons for allowance are given below:

The claimed subject matter is seen to be fully supported and enabled by the specification as originally filed. For example, pp. 4-5 of the specification describes the claimed hyaluronic acid-block polymer conjugates and their characteristic phase transition temperatures and other characteristics. Pp. 13-16 describe a method that enables one skilled in the art to make the claimed products. Test examples 1 and 2 on pp. 26 and 27 enable one skilled in the art to use it for tissue augmentation in joints, for example.

Furthermore, the claimed invention is seen to be novel and non-obvious over the prior art. Although Rhee et al. and Spaltro et al. both describe hyaluronic acid covalently bonded to a PPO-PEO block copolymer, and Pluronic triblock copolymers

such as those used in the claimed invention were known in the prior art, for example Schmolka et al., one of ordinary skill in the art would not have been motivated to produce the specific claimed invention. While the claimed gel is in fact included within the broad disclosure of Rhee et al. or Spaltro et al., producing it would require the specific optimization of multiple parameters, such as the length of the two polymers, the specific triblock polymer used, and the relative amounts of hyaluronic acid and pluronic. Achieving a specific phase transition temperature between 20-35 degrees Celsius would require one of ordinary skill in the art to optimize multiple parameters within the broad disclosure of the prior art. However, Rhee et al. and Spaltro et al. do not mention phase transition temperature as an important variable to be optimized by one of ordinary skill in the art, so one of ordinary skill in the art would have no reason to optimize the phase transitions temperature. Furthermore, Rhee et al. proposes that the polymers be crosslinked *in vivo* after injection as a liquid. (column 26, lines 42-58) This method of injection followed by crosslinking implies that the crosslinked gel is a solid at room temperature, and would be completely unnecessary if the gels could be injected as a room temperature liquid and then undergo the phase transition upon warming *in vivo*.

Furthermore, with regard to Kim et al., while the disclosed compositions of Kim et al. do in fact undergo a phase transition around 20 degrees, they lack other elements of the claims. In particular, the pluronic polymers of Kim et al. crosslink the hyaluronic acid by being attached to hyaluronic acid at both ends, as illustrated by the figure 3 on p. 74 of Kim et al. In addition, the hyaluronic acid used to make these gels is larger than that

recited in claim 9. p. 70, section 2.2 of Kim et al. discloses that 500 mg, or 2.85×10^{-4} mmol, of hyaluronic acid is used. From these figures it can be calculated that the average molecular weight of the hyaluronic acid is about 1750000 daltons, which is more than the limit of 1500000 daltons or less recited in claim 9. One of ordinary skill in the art would not have had any reason to substitute lower molecular weight hyaluronic acids for those used by Kim et al.

Accordingly, Applicant's amendment submitted March 21, 2008 is sufficient to remove all rejections made in the prior office action as discussed above and to place the application in condition for allowance.

Any comments considered necessary by Applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled, "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric S. Olson whose telephone number is 571-272-9051. The examiner can normally be reached on Monday-Friday, 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shaojia Anna Jiang can be reached on (571)272-0627. The fax phone

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Shaojia Anna Jiang, Ph.D./
Supervisory Patent Examiner, Art Unit 1623